

CROSSFEED

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Battery Safety

Lithium Batteries Are Explosive!

By ATCS (AW/SW) Denis Komornik

Are you the command battery-safety program manager? If so, did you know that you are responsible for ALL batteries used in your command? An alarming trend has developed in the battery-safety program that was discovered during recent safety surveys. The program managers that I surveyed were unaware that they are responsible for lithium batteries used in the ALSS and COMSEC workcenters. All program managers understood the responsibility for aircraft installed batteries with respect to replacement, training, and emergencies; but they had little idea about the lithium batteries used in the PRC-149 survival radio/COMSEC equipment and the explosive danger they pose (see attached photo).



As a battery-safety program manager, you are responsible for ensuring that personnel involved with handling and using all batteries receive quarterly training IAW the NAVOSH program. Program managers generally have conducted proper training for avionics-workcenter personnel, with regards

to lead acid and NICAD batteries, but have failed to train ALSS and COMSEC personnel in proper handling of lithium batteries.

What we have seen from the fleet is an accident waiting to happen. Commands have stored new and used lithium batteries with alkaline batteries, have stored batteries unsealed, or have stored them in the workcenter in units not installed in an aircraft or in flight equipment.

Following is an overview for proper storage and disposal of lithium batteries:

New and used lithium batteries will be stored in their original shipping containers and must be individually sealed in a plastic bag or wrapped in electrical insulating material while being stored in a cool, ventilated shelter.

Isolate the storage area from other hazardous and consumable material and use only for storage of used/unused lithium batteries.

Do not pierce, crush, burn, drop, cannibalize, dismantle, modify, or otherwise carelessly handle, nor short circuit, charge or reuse.

Effective and prompt disposal is required; do not store more than 30 pounds or for longer than 30 days.

These are only the highlights of the program. For more information, refer to NAVSEA S9310-AQ-SAF-010. The reference must be used when handling, storing, and disposing of lithium batteries.

Senior Chief Komornik is a maintenance analyst at the Naval Safety Center.

Support Equipment

Are Your S/E Pre-Ops Proper?

By AMC(AW) Paul Hofstad

While doing surveys at various locations, I have discovered a training deficiency in support equipment pre-operational inspections conducted by maintenance personnel. Specifically, my concern is with pre-operational inspections performed on the A/M26U-4 nitrogen-servicing unit (NSU).

It is a commonly used piece of support equipment in an organizational activity's daily maintenance effort. Yet, when I task a young Sailor, who is licensed to operate the nitrogen cart, to perform a pre-operational inspection for me, every inspection results in an unsatisfactory process evaluation. The reason is always the same: Not one individual knows where to find the calibration date. Licensed personnel are completely unaware and believe the tamper seal on the manifold gauge is the calibration sticker.

To become licensed for the A/M26U-4 NSU, personnel first must attend Phase I training at AIMD. During that training, they are shown where the calibration date is. Then, to complete Phase II training, they must perform a series of three "on the job" training requirements. Finally, they must pass a written, open-book test before becoming

licensed for the nitrogen cart. Once certified by the maintenance officer, they are required to follow procedures laid out by the Pre-Operational Inspection Card before operating the NSU.

The answer is simple. Follow the steps in the AG-750AO-MRC-000 A/M26U-4 Nitrogen-Servicing Unit Pre-Operational Inspection Card. Step 10 states, "Check gauges for obvious damage and a current calibration date." To reduce down time for the unit and to reduce stickers falling off of the gauges, AIMD personnel started placing the calibration stickers inside the door of the storage compartment. The funny thing is that personnel open this door when performing their pre-operational inspections but do not see the calibration sticker right in front of them.

Supervisors must ensure that their personnel are correctly performing inspections, properly training junior personnel, and positively protecting themselves against injury. This unit's gauges are calibrated for a reason. It is because 3,000 psi absolutely will kill a person without hesitation. It is imperative that our personnel are trained to prevent injury to themselves.

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Tool Control

The Words We Hate to Hear

By AMCS(AW/SW) Cheryl Poirier

It is the end of a 12-hour day; you are hot, tired, and ready to go home and have a cold, refreshing beverage. As you check your tools once, twice, and then a third time, a sick feeling in the pit of your stomach begins to grow. Thoughts race through your head: "Where was I last?" "Did I use it there?" "Where did I leave it?" "What plane did I just come from?" "I am in so much trouble; the chief is going to kill me." Your stomach is churning,

your head is about to blow, and, succumbing to the inevitable bout of cranial flatulence, you are at a loss for what to do next. Been there, done that, and have the gray hairs to prove it.

The five words everyone hates to hear: "We have a missing tool." When I survey quality assurance (QA), I perform lost-tool process evaluations and try to find the least experienced airman in the squadron/AIMD. My leadoff question is, "So, you

are checking your tools and find a screwdriver with a chunk missing out of it—you can't find the missing piece. Do you have a broken tool or a missing tool?" Inevitably, the answer I get is "a broken tool." The first sentence in the missing-tool section of NAMP, Vol. 5, Chapter 13, states: NOTE: Treat a broken tool with missing pieces as a missing tool. The procedures in the NAMP concerning missing tools are clear and do not leave room for interpretation.

I also review broken/worn/missing tool reports. Some of the discrepancies that I find repeated throughout squadrons and AIMDs are:

- No documentation of notification of the required personnel by maintenance control, and/or no MCN/JCN indicated for aircraft inspections during the missing-tool investigation

- No quality assurance officer recommendation and signature
- No maintenance officer "release safe for flight" signature
- Missing-tool reports that have been changed without the change being reflected in the QA BTR Logbook.

QA must stay on top of a missing-tool report until the issue is resolved completely, and a "release safe for flight" is obtained. Supervisors, before you equip your Sailors with the tools to do the job, equip them with the information needed to understand the importance of tool control and the procedures to follow in the event of a missing tool.

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Power Plants

"Gas-Free Safety, It's Still There..."

By AMC(AW) Paul Hofstad

During recent safety surveys, while reviewing QA functions, I have been inundated with questions concerning aviation gas-free engineering. Our AD analyst, as well as the Aviation Maintenance Management Team (AMMT), helped me sort out a response.

The questions centered on the NA-01-1A-35: Aircraft Fuel Cells and Tanks. The main source of confusion was the definition of Hands/Arms/Tool-In Maintenance procedures and the need for a gas-free certification.

Very simply, because of small access areas to fuel cells, such as those found on some aircraft where a person cannot enter the cell with the exception of his or her arms and hands, only lower explosive limit (LEL) checks are required in accordance with NA-01-35. However, if a person's head enters a cell, a gas-free certification is required, also in accordance with NA-01-35 and guidance from regional industrial hygienist. This, in itself sounds easy to understand, so why the confusion?

In the past, every time a cell was opened, a gas-free certification was issued, allowing technicians to begin maintenance in that particular cell. The certification was a way to document LEL checks for safe entry; and, together with visual



information display—maintenance action forms (VIDS MAFS), commands maintained a historical look into recent maintenance actions that required opening a fuel cell. However, with the advent of NALCOMIS, safer designs in fuel-cell maintenance, changes in maintenance manuals, and higher tempos in flight operation, gas-free certifications have become utilized less.

With change comes confusion, which is where we are now. Maintenance personnel must under-

stand that disaster is just a spark or zero oxygen breath away when working in open fuel cells. If LEL checks are performed without a gas-free certification, they should be logged on a MAF or in the workcenter's passdown log. In reality, type aircraft wings should ensure that all squadrons under their cognizance are performing and documenting LEL checks in the same manner. The best way to accomplish this task is through wing-directed local command procedures, using the NA-01-1A-35, and following recommendations issued by an industrial hygienist.

If personnel don't use good judgment and follow guidelines, they can die from inhaling gas fumes or in an explosion or fire caused by a tiny spark. Five personnel lost their lives in an explosion while performing fuel-cell maintenance on an E-2C. They did not perform LEL checks, and a simple spark from an unauthorized maintenance light killed them in an instant. We need to protect our folks to prevent the same action from occurring again. To be safe, then, why not issue a gas-free certification? The danger still exists, arms in or head in; you're just as dead by breathing toxic fumes as you are from an explosion.

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Class C Mishap Summary

By ADCS(AW/SW) Gary Dennis

From Aug. 04, 2004, to Nov. 30, 2004, the Navy had 37 Class C's that involved 39 aircraft. The damage total was \$1,772,133.

- Following flight operations, an EA-6B Prowler was spotted on the fantail and later was moved to a position aft of the No. 4 wire. The nose of the EA-6B was facing aft, with the station one pod adjacent to the "junkyard" on the starboard side of the ship. Between the hours of 2300 and 0700, maintenance was performed on the No. 4 wire. This maintenance included using two A/S32A-31A (stubby tow tractors). During the maintenance evolution, a squadron maintainer observed a stubby tractor drive between the aircraft station one pod and the "junkyard," going toward the bow.

Prior to flight ops the next morning, the aircraft was to be moved to the No. 2 elevator. As the aircraft was being moved, a maintainer noticed damage along the lower outboard side of the station one pod radome. Personnel visually inspected the area around the damage and found multiple pieces of paint chips and composite material. Damage to the radome was measured at 40.5 inches from the flight deck to the impact area.

Further investigation was conducted on various pieces of SE on the flight deck. Inspection of SE tractors showed that the aft portion of the top deck of one tractor measured at 40.5 inches. Further inspection of the SE found two stubby tractors parked nose to tail in the "junkyard." The outboard stubby tow tractor, closest to the landing area, had a significant rub mark and pieces of composite material in a small cubbyhole on the aft port side.

Failure to properly supervise the arresting gear maintenance crew led to this mishap, at a cost of \$23,464.

- A crew chief fell from a UH-1 while descending from a hover to a confined-area landing (CAL). The crew

chief sustained extensive injuries, resulting in more than five lost workdays. Two crew chiefs under instruction (CCUI) were on the flight that day. A five-man bench seat was part of the aircraft's installed equipment at that time and was inspected IAW daily card 1.9 before flight.

The helicopter took off for NVG CAL work at CAL site No. 5. CAL site No. 5 is a published site, with a very large, relatively flat, unprepared surface and negligible obstructions on three sides. During the fifth CAL evolution, landing checks were performed, and the crew chief and both CCUIs replied, "Set in back." A normal final approach profile was flown, and, while restrained in lap belts, both CCUIs performed clearing calls on each side of the aircraft at both 50 feet AGL and 25 feet AGL. At 15 feet AGL, the pilot shallowed out his final approach, and more clearing calls were made by both CCUIs. While making clearance calls, in a 15-foot-AGL, near-zero airspeed hover, one of the CCUIs fell from the right side of the aircraft and hit the ground. The pilot landed the aircraft, and the crew chief was recovered, then was flown three miles to the base-hospital landing pad.

Investigation results revealed the current lap-belt anchor latches possess a movable arm that is constructed of thin, folded metal around a spring that keeps the movable latch arm in the closed position. This thin, folded metal arm is easily pinched and deformed in such a manner that it renders the spring useless, and the movable arm no longer is held in the closed position. Testing shows that nearly all of the lap belts in this squadron can have one or both of the anchor-latch springs defeated in this manner with thumb pressure on the movable arms.

The cause of this mishap was equipment failure at a cost of only \$2,330, but a shipmate was injured seriously.

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